

III. REMARKS

A. Status of the Claims

Claims 1, 7, 10, 13, and 14 have been amended. Claims 1, 7, and 14 have been amended in response to the Examiner's rejection under 35 U.S.C. 101 to even more clearly recite patentable subject matter. Claims 10 and 13 have been amended to improve clarity. None of these claims have been narrowed.

Claims 16 has been added. Support for this claim can be found throughout the specification as originally filed, including for example, original claims 1 and 2, and paragraphs [0008], [0009], and [00021].

It is respectfully submitted that no new matter has been added by virtue of these amendments.

B. Response to the Examiner's Rejections

In the Office Action, the Examiner has rejected claims 1-10, and 14-15 under 35 U.S.C. 101 on the grounds the claims do not "produce either a physical transformation or a useful, concrete, and tangible result." Applicants respectfully submit that the originally filed claims recite patentable subject matter under 35 U.S.C. 101.

Originally filed claims 1-6 were directed to a method of scheduling execution of processes on a computer, and recite executing processes based on a series of events and the execution of a timer set in the manner claimed. The operation of a computer in accordance with the claimed method is a useful, tangible result. In any event, and in order to expedite prosecution of this case, applicants have amended claim 1 to even more affirmatively recite the execution of

processes on a computer. Withdrawal of the 35 USC 101 rejection of claim 1, and claims 2-6 depending therefrom is therefore respectfully requested.

Originally filed claims 7-10, and 14-15 were directed to a computer system including an operating system which executes processes based on a series of events and the execution of a timer or timers set in the manner claimed. A computer system operating in accordance with the operating system as claims is a useful, tangible, result. In any event, and in order to expedite prosecution of this case, applicants have amended claims 1 and 14 to even more affirmatively recite a computer and the execution of processes on the computer. Withdrawal of the 35 U.S.C. § 101 rejection of claim 7 and 14, and claims 8-10, and 15 depending therefrom is therefore respectfully requested.

In the Office Action, the Examiner has also rejected claims 10 and 13 under 35 U.S.C. § 112, ¶ 2 as allegedly failing to particularly point out and distinctly claim what applicants regard as the invention. It is respectfully submitted that claims 10 and 13, as amended, overcome the Examiner's rejection. Support for the amendment can be found, for example, in paragraph [0022] beginning with the second sentence, and paragraphs [0049] and [0052].

In the Office Action, the Examiner has rejected claims 1-11 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 4,989,133 to May. Independent claims 1 and 7 recite:

1. A computerized method for scheduling execution of one or more processes in a computer, comprising the steps of:
 - providing a timer;
 - providing a series of events for each process of a preselected set of processes, the events comprising a start time for each process;
 - providing a table;
 - storing each event in the table; and
 - operating the timer to be set for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next event in the table;

executing the plurality of processes on the computer based upon the series of events, each process starting execution based on the timeout of its respective time out event on the timer.

7. A computer system comprising:
a computer including:

a timer;

a table storing a series of events for each process of a preselected set of processes, the events comprising a start time for each process;

an operating system executing on the computer and causing execution of each process based on a time out of the timer, each process starting execution according to the corresponding start time stored in the table, the timer being arranged and configured to be set for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next event in the table.

11. A method for scheduling one or more processes comprising the steps of:

providing a timer;

starting a plurality of processes based on a time out of the timer, each process starting execution according to a start time specified in a time table;

if one of the processes starts execution while another process is executing, preempting the process already executing;

if one of the processes has been preempted and the process that preempted the process stops execution, resuming the process that has been preempted; and

based on a time out of the timer, stopping execution of the processes regardless of whether the process has stopped execution normally, each process stopping execution according to a deadline specified in the time table;

setting the timer for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next one of a start time and deadline in the time table.

The '133 patent fails, at the very least to disclose the limitations of claims 1, 7 and 11 set forth in underline above. To the contrary, the '133 patent describes a scheduling system which includes TIMER LOGIC 86 which compares the value of CLOCK REG (which "indicates the current time") with the value of NEXTTIMEFLAG (which is "for holding the time at which the first process on the timer list of appropriate priority becomes ready for scheduling."). See '133 patent, col. 7, lines 22-23, 54-56, col. 8, lines 46-58. Thus, to the extent the '133 patent discloses a timer with a reload value at all, the reload value is set to the time at which the next

process is ready to execute, not to the “number of time increments until a next event in the table” as required by claims 1 and 7, or “to a number of time increments until a next one of a start time and deadline in the time table” as recited in claim 11. Applicants further note that advantages resulting from reloading the timer based upon a number of time increments to a next event are explained in paragraphs [0065] and [0066] of the present invention.

Withdrawal of the Examiner’s rejection of claims 1, 7, and 11, and claims 2-6 and 8-10 depending therefrom is therefore respectfully requested.

Further, claim 11 recites that the time table includes both start times and deadline times, and, that the time is set “for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next one of a start time and deadline in the time table”, and that “based on a time out of the timer, stopping execution of the processes regardless of whether the process has stopped execution normally, each process stopping execution according to a deadline specified in the time table.” In support of the rejection, the Examiner cites col. 3, lines 22-30, which reads: “Still another feature of the preferred embodiment is that a time duration may be specified for the execution of a process. The microcomputer is responsive to this time duration and causes the processor to stop executing the current process after expiration of this time duration. It reschedules the process which has thus been terminated by adding it to a scheduled collection.” It is respectfully submitted that this passage does not disclose the limitations set forth above. Further, it does not appear to applicants that the limitations set forth above are disclosed anywhere in the ‘133 patent. Withdrawal of the Examiner’s rejection of claim 11 is therefore respectfully requested on this basis as well.

Claim 2 depends from claim 1, and recites “wherein the events further include a deadline for each process of the preselected set of processes; based on a time out of the timer, stopping execution of an executing process regardless of whether the process has stopped execution normally, each process stopping execution according to the corresponding deadline.” In support of the rejection, the Examiner again cites col. 3, lines 22-30. It is respectfully submitted that

neither this passage, nor the remainder of the '113 patent disclose this limitation. Withdrawal of the Examiner's rejection of claim 2, is therefore respectfully requested on this basis as well

Claim 8 depends from claim 7, and recites "wherein the table further stores events comprising a deadline for each process, the operating system causing, based on a time out of the timer, execution of an executing process to stop regardless of whether the process has stopped execution normally, each process stopping execution according to the corresponding deadline stored in the table." In support of the rejection, the Examiner again cites col. 3, lines 22-30. It is respectfully submitted that neither this passage, nor the remainder of the '113 patent disclose this limitation. Withdrawal of the Examiner's rejection of claim 8, is therefore respectfully requested on this basis as well

Applicants note that the Examiner further rejected claims 6 and 10 on the same basis as the Examiner rejected claim 2 on the grounds that ""disabling the ISR and enabling the ISR is the equivalent of stopping execution of an executing process according to the deadline". Applicants respectfully disagree. Claims 6 and 10 recite that the ISR is "disabled" after it executes, and then enabled. Thus, execution of the IRS is not "stopped ... according to the deadline" in claims 6 and 10 (although in respect to intervening claims 2 and 8, the ISR could also be a process having a deadline). Claims 6 and 10 recite that when the ISR completes execution, the ISR (e.g., further instances of the ISR) is disabled for a period of time (e.g. the enable time of claim 6). It is respectfully submitted that the limitations of claims 6 and 10 are also not disclosed in the '113 patent.

The Examiner has rejected claims 12 through 15 under 35 U.S.C. § 103 as obvious over the '113 patent in view of U.S. 5,838,957 to Rajaraman. Claims 12 and 14 are independent claims. Claims 13 and 15 depend from claims 12 and 14 respectively. In his rejection, the Examiner applies the '113 patent in the same manner described above with regard to claims 1-11, and alleges that the '113 patent discloses all of the limitations of claims 12-15, except for the use of a plurality of timers. The Examiner then alleges that the '957 patent "teaches the usage of

a plurality of timers that is set to expire at different times for the purpose of indicating the occurrences of different events.” Thus, in addition to the admitted failure of the ‘113 patent to disclose the plurality of timers as claimed; for the same reasons outlined above with regard to claims 1 and 2, the ‘113 patent fails to disclose at least the limitations of claims 12 and 14 which are underlined below:

12. A method for scheduling one or more processes comprising the steps of:
 providing a plurality of timers;
 starting a plurality of processes based on a time out of a first one of the timers, each process starting execution according to a start time specified in a time table; and
 based on a time out of a second one of the timers, stopping execution of the processes regardless of whether the process has stopped execution normally, each process stopping execution according to a deadline specified in the time table;
 setting the first one of the timers for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next start time in the time table;
 setting the second one of the timers for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next deadline in the time table.

14. A computer system comprising:
a computer comprising:
 a timer;
 a table storing a series of events for each process of a preselected set of processes, the events comprising a start time for each process and a deadline for each process;
 an operating system executing on the computer and causing execution of each process based on a time out of the timer, each process starting execution according to the corresponding start time stored in the table and stopping execution according to the corresponding deadline stored in the table, the timer being arranged and configured to be set for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next event in the table;
 the timer comprising a first timer set for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next start time in the time table, and a second timer set for a time out at each of a series of reload values, each reload value being equal to a number of time increments until a next deadline in the time table.

Even accepting, arguendo, the Examiner's allegations regarding the '957 patent, it is respectfully submitted that the addition of the '957 patent cannot cure the deficiencies identified above with regard to the '113 patent. Withdrawal of the Examiner's rejection of claims 12 and 14 under 35 U.S.C. § 103 is therefore respectfully requested. As claims 13 and 15 depend from and incorporate the limitations of claims 12 and 14 respectively, withdrawal of the Examiner's rejection of these claims is also requested.

C. Conclusion

It is respectfully submitted that the present application is in condition for allowance. An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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